

WHAT IS CLAIMED IS:

1. A portable analyzer for detecting properties of a given sample analyte comprising:  
a housing having a bio-sensor mounting socket embedded therein; and  
a miniature electro-mechanical vibration device attached to the socket such that  
energizing the vibration device causes the vibration device to vigorously shake the  
socket.
2. The portable analyzer according to Claim 1 further comprising a bio-sensor  
plugged into the socket such that the energizing of the vibration device will further cause  
the vibration device to vigorously shake the sensor.
3. The portable analyzer according to Claim 2 further comprising a fluid  
compartment having a liquid sample having an analyte suspended or dissolved therein,  
wherein the liquid sample is in fluid communication with the bio-sensor, and further  
wherein the energizing of the vibration device will further cause the vibration device to  
vigorously agitate the fluid compartment to cause the analyte suspended or dissolved in  
the liquid sample to accelerate the mass transport of analyte beyond that available in the  
absence of agitation.
4. The portable analyzer according to Claim 3 further comprising:  
a data processing device;  
a data input device in communication with the data processing device;  
an algorithmic software directing the data processing device; and  
a data storage unit, wherein discrete analyte data associated with the liquid sample  
is stored and supplied to the data processing device such that the data processing device,  
directed by the algorithmic software, will automatically determine bioanalytical data  
associated with the liquid sample, wherein predetermined parameters associated with the  
bioanalytical data are determined via the data input device.

5. The portable analyzer according to Claim 4 wherein the data processing device is a digital signal processor.
6. The portable analyzer according to Claim 5 wherein the data input device is a keypad.
7. The portable analyzer according to Claim 2 wherein the biosensor comprises an optically based miniaturized sensor.
8. A portable analyzer for detecting properties of a given sample analyte comprising:
  - a bio-sensor; and
  - a miniature electro-mechanical vibration device configured to vigorously shake the biosensor.
9. The portable analyzer according to Claim 8 further comprising a fluid compartment configured to receive a liquid sample having an analyte suspended or dissolved therein such that the liquid sample is in fluid communication with the bio-sensor, and further wherein the energizing of the vibration device will further cause the vibration device to vigorously agitate the fluid compartment to cause the analyte suspended or dissolved in the liquid sample to accelerate the mass transport of analyte beyond that available in the absence of agitation.
10. The portable analyzer according to Claim 9 further comprising:
  - a data processing device;
  - a data input device in communication with the data processing device;
  - an algorithmic software directing the data processing device; and
  - a data storage unit, wherein discrete analyte data associated with a liquid sample is stored and supplied to the data processing device such that the data processing device, directed by the algorithmic software, will automatically determine bioanalytical data associated with the liquid sample, wherein predetermined parameters associated with the bioanalytical data are determined via the data input device.

11. The portable analyzer according to Claim 10 wherein the data processing device is a digital signal processor.
12. The portable analyzer according to Claim 10 wherein the data input device is a keypad.
13. The portable analyzer according to Claim 8 wherein the biosensor comprises an optically based miniaturized sensor.
14. A portable analyzer for detecting properties of a given sample analyte comprising:
  - a biosensor;
  - a fluid compartment in fluid communication with the bio-sensor; and
  - a miniature electro-mechanical vibration device configured to vigorously shake the fluid compartment.
15. The portable analyzer according to Claim 14 wherein the miniature electro-mechanical vibration device is further configured to vigorously agitate the contents of the fluid compartment.
16. The portable analyzer according to Claim 14 wherein the fluid compartment is configured to receive a liquid sample having an analyte suspended or dissolved therein, and further wherein the vibration device is configured to vigorously agitate the fluid compartment to cause an analyte suspended or dissolved in the liquid sample to accelerate the mass transport of analyte beyond that available in the absence of agitation.
17. The portable analyzer according to Claim 14 wherein the biosensor comprises an optically based miniaturized sensor.

18. The portable analyzer according to Claim 14 wherein the fluid compartment comprises:

a fluid chamber; and

a lid configured to open and close such that a liquid or solid sample having a first analyte suspended therein can be sealed within the chamber.

19. The portable analyzer according to Claim 18 wherein the lid comprises a second analyte embedded therein such that agitation of the fluid compartment causes the second analyte to mix with the liquid or solid sample sealed within the chamber.

20. A portable analyzer for detecting properties of a given sample analyte comprising:  
a biosensor;  
a fluid compartment in fluid communication with the bio-sensor; and  
a miniature electro-mechanical vibration device configured to vigorously shake  
the biosensor.

21. The portable analyzer according to Claim 20 wherein the miniature electro-mechanical vibration device is further configured to vigorously shake the fluid compartment.

22. The portable analyzer according to Claim 20 wherein the fluid compartment is configured to receive a liquid sample having an analyte suspended or dissolved therein, and further wherein the vibration device is configured to vigorously shake the fluid compartment to cause the analyte suspended or dissolved in the liquid sample to accelerate the mass transport of analyte beyond that available in the absence of agitation.

23. The portable analyzer according to Claim 20 wherein the biosensor comprises an optically based miniaturized sensor.

24. The portable analyzer according to Claim 20 wherein the fluid compartment comprises:

a fluid chamber; and

a lid configured to open and close access to the fluid chamber such that a liquid or solid sample having a first analyte suspended therein can be sealed within the chamber.

25. The portable analyzer according to Claim 24 wherein the lid comprises a second analyte embedded therein such that agitation of the fluid compartment causes the second analyte to mix with the liquid or solid sample sealed within the chamber.

26. A portable analyzer for detecting properties of a given sample analyte comprising:

a biosensor having a sensing surface;

a sample compartment configured to receive a sample having an analyte suspended therein; and

a miniature electro-mechanical vibration device configured to vigorously shake the sample compartment to cause a desired portion of the analyte to contact the sensing surface of the biosensor.

27. The portable analyzer according to Claim 26 wherein the biosensor comprises an optically based miniaturized sensor.

28. The portable analyzer according to Claim 26 further comprising a sealing element configured to selectively seal the sample compartment.

29. The portable analyzer according to Claim 28 wherein the sealing element comprises a septum.

30. The portable analyzer according to Claim 28 wherein the sealing element comprises a removable cap.

31. The portable analyzer according to Claim 28 wherein the sealing element comprises a hinged cap.
32. The portable analyzer according to Claim 26 wherein the sample comprises at least one form selected from the group consisting of a liquid and a solid.
33. The portable analyzer according to Claim 26 further comprising at least one secondary reagent associated with the sample chamber such that the shaking of the sample compartment will cause analyte from a sample contained therein to mix with the secondary reagent.
34. The portable analyzer according to Claim 33 wherein the secondary reagent is embedded in the sample chamber.
35. The portable analyzer according to Claim 33 wherein the secondary reagent is embedded in the sealing element.
36. The portable analyzer according to Claim 26 wherein the sample compartment is configured to receive a liquid sample having an analyte suspended or dissolved therein, and further wherein the vibration device is configured to vigorously shake the sample compartment to cause the analyte suspended or dissolved in the liquid sample to accelerate the mass transport of analyte beyond that available in the absence of agitation.
37. The portable analyzer according to Claim 26 further comprising:
  - a data processing device;
  - a data input device in communication with the data processing device;
  - an algorithmic software directing the data processing device; and
  - a data storage unit, wherein discrete analyte data associated with a sample contained within the sample compartment is stored and supplied to the data processing device such that the data processing device, directed by the algorithmic software, will automatically determine bioanalytical data associated with the sample, wherein

predetermined parameters associated with the bioanalytical data are determined via the data input device.

38. The portable analyzer according to Claim 37 wherein the data processing device is a digital signal processor.

39. The portable analyzer according to Claim 37 wherein the data input device is a keypad.

40. The portable analyzer according to Claim 26 further comprising means for transmitting and receiving data via a wireless communications link.

41. The portable analyzer according to Claim 40 wherein the means for transmitting and receiving data comprises a radio frequency receiver and a radio frequency transmitter.